REMARKS

Applicants thank the Examiner for notice that claims 14-15, 17-19 and 21-23 are allowed. Claims 1-2, 4-7, 9-13 and 24-25 stand rejected. Applicants respectfully traverse and request reconsideration.

Preliminary Matters

Applicants submit that they have not received any notice that the Examiner has considered the information provided in Applicants' IDS submitted March 30, 2006. Applicants respectfully request the Examiner to consider this information and provide an initialed copy of the IDS for Applicants' file.

Claim Amendments

Claims 1, 4, 6, 9, 14 17-19 and 21-23 have been amended. New claims 26-34 have been added. No new material has been added.

Claim Rejections

Claims 1–2, 5–7, 10–11 and 24–25 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,742,139 to Forsman et al. ("Forsman"). Claims 4 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Forsman in view of U.S. Patent No. 6,543,002 to Kahle et al. ("Kahle"). Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Forsman in view of U.S. Patent Application Publication No. 2002/0093505 to Hill et al. ("Hill").

Forsman teaches a method for reestablishing communications between a host and a service processor after the service processor has ceased to function correctly. (*See* Abstract). The host exchanges heartbeat signals with the service processor. (Abstract, Col. 4, ll. 9-23). The heartbeat signals indicate that the service processor is active and functioning. (Abstract). In response to a failure to receive a heartbeat signal and without comparing the receipt of the

heartbeat signals to any other data or state, the host causes a hard reset of the service processor. (Abstract, Col. 4, ll. 13-18). It appears that Forsman only requires listening for the return of a heartbeat signal when determining when to reset the service processor. Applicants submit that a heartbeat signal, at best, indicates one of two conditions. If the heartbeat signal is received, it indicates one condition: proper functioning of the service processor. If the heartbeat signal is not received, it indicates an opposite condition: improper functioning of the service processor. Forsman appears silent as to monitoring or having knowledge of the state or activity of the service processor other than merely through the use of monitoring heartbeat signals sent therefrom.

In an exemplary process for recovering communications by the host with a service processor, i.e., after the host fails to receive a heartbeat signal from the service processor, Forsman teaches that "the host determines if there are conditions … that exist that preempt the host from resetting the service processor …." (Col. 5, ll. 2-7). If there are no such preemptive conditions, then "the host sends a signal to the service processor warning the service processor that a hard reset is about to occur …." (Col. 5, ll. 12-13). The host then determines whether an acknowledgement has been received indicating that the service processor has received the warning and is ready to be reset or whether a timeout has occurred. A timeout occurs after the expiration of a timeout period, "a predefined interval of time that the host must wait for a response from the service processor before assuming that the service processor is not going to respond." (Col. 5, ll. 21-22). After either an acknowledgement or a timeout, the host causes a hard reset of the service processor. (Col. 5, ll. 23-25). Forsman appears silent as to halting communications or halting command communications. Instead, Forsman appears to teach that communications may still be open during the timeout period.

Independent Claims 1, 6, 11, 24, 26, 30 & 34

Claims 1, 6 and 24

In the "Response to Arguments" section, the Office Action alleges that Forsman discloses a system that detects a discrepancy between a current state of the co-processor and a current activity of the co-processor. Specifically, the Office Action states that a discrepancy between a current state and a current activity of the co-processor exists in the Forsman system when the system is active and working correctly and when there is no heartbeat signal. Applicants respectfully disagree for two separate reasons: (1) the heartbeat signal is not capable of indicating a discrepancy and (2) the rejection improperly conflates the claimed "current state" limitation and the "current activity" limitation into a single limitation.

1. The heartbeat signal is not capable of indicating a discrepancy

As noted above, Forsman appears to solely use a heartbeat signal to determine whether to reset the service processor. The receipt of a heartbeat signal indicates that the service processor is functioning correctly; the absence of a heartbeat signal indicates that the service processor is not functioning properly. (Col. 4, ll. 13-15). In other words, the heartbeat signal is capable of indicating only one of two things: functioning or not functioning. No other condition, signal or data appears to be used by Forsman to determine whether the service processor is to be reset. Consequently, a discrepancy between a current state and a current activity cannot be detected by the Forsman reference as a discrepancy between a current state and a current activity requires more than the receipt of a signal that is capable of indicating one of two things: functioning or not functioning.

More specifically, Applicants' claim 1 requires, a circuit that "detect[s] a hang in the co-processor by detecting a discrepancy between a current state of the co-processor and a current

activity of the co-processor." At best, and solely for argument's sake, the heartbeat signal is capable of indicating one of Applicants' claimed current state of the co-processor or Applicants' claimed current activity of the co-processor. Therefore, if the heartbeat signal is capable of indicating only one of a current state or a current activity, it cannot possibly be capable of detecting a discrepancy between a current state and a current activity of the co-processor.

In fact and assuming that the heartbeat signal reflects a current state of the service processor (as asserted by the Office Action), the heartbeat signal is not only incapable of a discrepancy, it is also only capable of confirming the true status of the service processor. The Office Action states, on page 10, that a discrepancy exists when the service processor is "active and working correctly" and when the current activity of the service processor is characterized by the absence of heartbeat signals. Applicants note, however, that when the service processor of Forsman is active and working correctly, the host is receiving heartbeat signals. Conversely, when the service processor of Forsman is not active and working correctly, the host is not receiving heartbeat signals. Thus, no discrepancy exists. In fact, the opposite appears to be true: the heartbeat signal merely confirms the current status of the service processor. For this reason alone, claim 1 appears to be in condition for allowance.

2. The rejection improperly conflates the claimed "current state" limitation and the "current activity" limitation into a single limitation

Furthermore, Applicants respectfully note that the Office Action's rejection improperly collapses two distinct elements of Applicants' claim 1 into one limitation. Applicants specifically reference page 10 of the current Office Action where it states that "[w]hen the host fails to detect a heartbeat signal, it is a discrepancy between the current state (i.e., active and working correctly) and the current activity (no heartbeat signal)." (Page 10). Applicants respectfully submit that this statement improperly collapses the claim terms "current state" and

"current activity" into a single limitation. According to the Office Action, the two claim terms must have the same meaning or be the same thing because: (1) the heartbeat signal is allegedly capable of indicating a discrepancy and is also allegedly capable of indicating a current activity; and (2) the Office Action does not proffer a citation to any portion of Forsman that allegedly teaches the claimed "current state of the co-processor" limitation. Because Forsman fails to use any other criteria, but the heartbeat signal, to determine when the service processor is hung, the Office Action appears to assert that the heartbeat signal reflects the current state of the service processor. This does not appear to be an accurate characterization of Forsman and is not a proper characterization of the claimed subject matter. Thus, this reason alone supports allowance of claim 1.

Claims 6 and 24 contain subject matter similar in nature to that presented above in claim 1. For at least this reason, claim 6 and 24 are also believed to be in proper condition for allowance.

Claim 11

Claim 11 is directed to a circuit for monitoring and resetting a co-processor comprising "a halt communications module operative to halt command communications with the co-processor, in response to detecting a hang in the co-processor." The Office Action states that reset of the service processor "includes determining whether there are conditions that preempt the host from resetting the service processor in step 304 (figure 3). Next, the host waits for a predetermined timeout period for the service processor to respond to the reset signal (column 5 lines 16-22). The method of figure 3 is performed in response to detecting a hang in the service processor (column 5, lines 2-7). Therefore, this step is performed in response to detecting a hang

in the service processor." (Page 11). Applicants respectfully submit that these statements fail to teach or suggest the above-cited claim language.

For instance, the claim language recites a halt communications module that is operative to "halt command communications with the co-processor in response to detecting a hang in the co-processor." (Emphasis added). The mere fact that the host in Forsman may wait a predetermined timeout period for the service processor to respond to a reset signal does not teach or suggest the halting of command communications with the co-processor (presumably, the service processor). To the contrary, Forsman requires that the host listens during a prescribed period for a suitable service processor response (e.g., an acknowledgement) (*See e.g.*, Col. 5, ll. 16-17). Thus, if anything, communication appears to be open. Nothing in Forsman appears to teach or suggest that the host and service processor do not communicate commands. In fact, Applicants submit that because communication is still open during the alleged "timeout period" (e.g., the service processor may respond with an acknowledgement indicating that the service processor has received the warning and is ready to be reset), Forsman appears to teach the opposite of Applicants' claim language. For this reason alone, Applicants contend that claim 11 is also in proper condition for allowance.

Claims 26, 30 & 34

Applicants respectfully reassert the relevant remarks above with respect to claims 1 and 6. Claims 26 and 30 further require "detecting a discrepancy between a current state of the co-processor and data in one or more storage elements associated with the co-processor, wherein the data in the one or more storage elements represents a current activity of the co-processor." As previously submitted, the Forsman system uses a host to monitor heartbeat signals sent from the service processor to the host processor. No other detection appears to be taught or suggested by

Forsman. Applicants are unable to find in Forsman any teaching or suggestion as to Applicants' claimed detection of a discrepancy between a current state and data in one or more storage elements associated with the co-processor where the data in the one or more storage elements represents a current activity of the co-processor. If the Examiner is of a different opinion, Applicants respectfully request a showing as to where Forsman allegedly teaches the claimed subject matter. For these reasons, claims 26 and 30 are believed to be in proper condition for allowance.

Claim 34 contains subject matter similar to that presented above in claims 26 and 30. For this reason alone, claim 34 is also believed to be in proper condition for allowance.

Dependent Claims

Claim 4, 9, 27 and 31

Claims 4 and 9 both provide that the "discrepancy is detected by detecting the current state to be busy, by detecting a busy flag to be set, and detecting no progress on current activity, by detecting the same contents in a co-processor register as examined before and after a wait period." Claims 4 and 9 stand rejected based on Forsman in view of Kahle. Specifically, the Office Action states that Forsman, in column 4, lines 9-12, teaches or suggests the detection of the current state to be busy by detecting a busy flag to be set. (Page 6).

Applicants note that the same or similar claim language is included in allowable claims 14 and 19 and that the same reference to column 4, lines 9-12 of Forsman was previously used in the Office Action mailed June 2, 2006 with respect to allowable claim 14 and 19. As previously and successfully argued by Applicants, the cited portion of Forsman is silent as to a busy flag or the detection of the current state of the co-processor using the busy flag. Instead, this portion of the reference states that "[i]n a proper running state, service processor 204 monitors system

operations over JTAG/I^2C busses 210. Host 202 and service processor 204 also exchange heartbeat signals 206, which are services proceed within service processor 204." Although the reference uses the word "state", the cited portion fails to address other claim limitations. The recent allowance of claims 14 and 19, based in part on the above argument, appears to suggest that the Office capitulated with respect to this point; no combination of the cited prior art appears to teach or suggest the claim language of claims 4 and 9. Accordingly, claims 4 and 9 are believed to be allowable.

New claims 27 and 31 contain similar limitations to those presented in claims 4 and 9 and are therefore believed to be allowable for at least the same reasons presented above.

New Claims 28-29 and 32-33

With respect to new claims 28 and 32, Applicants claim determining if the data in the one or more storage elements reflects processing of instructions by the co-processor. Applicants respectfully submit that these limitations are allowable for at least the same reasons that claims 26 and 30 are allowed.

With respect to new claims 29-33, Applicants claim that the current state of the co-processor is represented by data stored in the one or more storage elements associated with the co-processor. Applicants respectfully reassert the relevant remarks made above as to claims 26 and 30 and further note that Forsman does not appear to teach or suggest data stored in one or more storage elements associated with the co-processor wherein the current state is represented by this data. If the Examiner is of a different opinion, Applicants respectfully request that the next Office Action provide a detailed reference by column and line number indicating that portion of Forsman that allegedly teaches or suggests this limitation.

Claims 2, 5, 7, 10, 12-13 and 25

Claims 2, 5, 7, 10, 12-13 and 25 depend upon one of the allowable base claims and are believed to be allowable for at least this reason. Therefore, reconsideration and withdrawal of the rejections is respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this response is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (312) 609-7599.

Respectfully submitted,

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